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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/641,417	08/16/2000	Noel Morel	33428-PCT-USA-A	4877

21003 7590 04/08/2003

BAKER & BOTTS
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER
FISCHER, JUSTIN R

ART UNIT	PAPER NUMBER
1733	13

DATE MAILED: 04/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/641,417	MOREL, NOEL	
	Examiner	Art Unit	
	Justin R Fischer	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 January 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3* is/are rejected.

7)☒ Claim(s) *4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimura (US 5,386,863, of record). As best depicted in Figure 1, Hashimura '863 discloses a pneumatic tire comprising a pair of bead portions, a pair of sidewall portions, and a crown portion, wherein said crown portion is formed by laying a single mix of tread over the radially outer edges of the sidewall rubber mix to form a circular junction. However, Hashimura does not expressly disclose the circular junction J to be located at a radius RC from the axis of rotation of the tire within the claimed ranges of:

1) $0.8R_S + 0.2R_B \leq R_C \leq 0.9R_S + 0.1R_B$

2) $0.9R_{SS} + 0.1R_B \leq R_C \leq R_{SS}$

where R_S = the equatorial crown radius of the tread, R_B = the radius of the bead seat measured on the line perpendicular to the axis of rotation of the tire passing through the center of gravity of the bead wire cross-section, and R_{SS} = the equatorial radius of the center line of the carcass reinforcement. For tires, the junction radius $R_C = R_B$ + the radial height j of the junction, the tread crown radius $R_S = R_B$ + the radial height H of the tire, and the carcass centerline radius $R_{SS} = R_B$ + the radial height h of the carcass centerline. Thus **the claimed ranges simplify to**

1) $0.8(R_B + H) + 0.2R_B \leq R_B + j \leq 0.9(R_B + H) + 0.1R_B$

$0.8H \leq j \leq 0.9H$

2) $0.9(R_B + h) + 0.1R_B \leq R_B + j \leq R_B + h$

$0.9h \leq j \leq h$

As to the first claimed range and with the above in mind, one of ordinary skill in the art would understand the radial height j of the junction to be accurately depicted relative to the radial height H of the tire in Hashimura Figure 1 so that $j = 0.82H$ - **falling well within the first claimed range of $0.8H \leq j \leq 0.9H$** - even if the entire Figure 1 is not a working drawing, because Hashimura Figure 1 accurately illustrates both a radial distance SH, ending at the same height as the radial height H of the tire, and the relative radial distances 0.75SH and 0.2SH which are in fact 75% and 20% respectively of the illustrated radial distance SH.

As to the second claimed range, although the position of the carcass centerline height h is not expressly depicted, Hashimura (Figure 1) communicates to one of ordinary skill in the art that the radial height j of the junction is in the general vicinity of and a little less than the radial height h of the carcass centerline, **overlapping the second claimed range of $0.9h \leq j \leq h$**. It would therefore have been obvious to one of ordinary skill in the art to set the radial height j of the junction within the range communicated to one of ordinary skill in the art by Hashimura Figure 1 absent unexpected results. It should be noted that in the specification p. 6 starting on line 17 applicant refers to "testing" but provides no data which might support an allegation of unexpected results.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuyama (US 3,825,052, of record) in view of Arai (US 4,082,132, of record). As best depicted in Figure 3, Matsuyama is directed to a heavy duty tire structure having a pair of bead portions, a pair of sidewall portions, and a crown portion, wherein said crown portion is formed by laying a single mix of tread over the radially outer edges of the sidewall rubber mix to form a circular junction. The reference, however, fails to expressly relate the junction point with the equatorial crown radius and the equatorial radius of the carcass structure. In any event, Matsuyama and Arai, which is similarly directed to a heavy duty tire, do provide several measurements that suggest that the tire design of the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention, as set forth below.

As stated in the previous paragraph, the limitations of the claimed invention are analogous to limitations (1) and (2) set forth above. In this instance, Matsuyama states that a distance y1, which is equal to 10% - 30% of the section height (equivalent to equatorial crown radius), separates the junction point from the axially outer edge of the tread. Thus, in the embodiment when y1=10% (positively recited embodiment since value is an endpoint), the remaining tire portions (junction radius or height and tread camber) combine to define 90 % of the equatorial crown radius. As a result, to meet the limitations of the claimed invention, the tread camber needs to be less than 10% of the equatorial crown radius. In viewing the figures of Matsuyama, it is clearly evident that the tread camber is extremely small as compared to the section height of the tire. Furthermore, Arai suggests that a flat crown region is desired in heavy duty tires in order to prevent belt edge separation and uneven tread wear, it being recognized that a

flat crown region is analogous to defining a small tread camber (Column 1, Lines 5-36). Thus, in viewing Matsuyama and Arai, one of ordinary skill in the art at the time of the invention would have readily appreciated that the tread camber of Matsuyama is less than 10% of the tire section height, such that the resulting junction point height would be between 80 % and 90 % of the equatorial crown radius.

As per limitation (2), although the position of the carcass centerline height h is not expressly depicted, Hashimura Figure 1 communicates to one of ordinary skill in the art that the radial height j of the junction is in the general vicinity of and a little less than the radial height h of the carcass centerline, **overlapping the second claimed range of $0.9h \leq j \leq h$**. It would therefore have been obvious to one of ordinary skill in the art to set the radial height j of the junction within the range communicated to one of ordinary skill in the art by Hashimura Figure 1 absent unexpected results. It should be noted that in the specification p. 6 starting on line 17 applicant refers to "testing" but provides no data which might support an allegation of unexpected results.

4. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over either one of Hashimura '863 or Matsuyama in view of Aria, as applied to claim 1 above, and further in view of Hashimura (JP 06032114, of record) and Matsui (JP 09-136512, newly cited). Hashimura '863, Matsuyama, and Aria are applied in the same manner as set forth above. These references, however, fail to suggest a circumferential groove in the region adjacent the junction point (within 10 millimeters radially outward or inward). In any event, it is extremely well known and conventional to include a circumferential groove in the shoulder region where the junction point occurs. For example, Hashimura '114 depicts at least a single narrow groove in the shoulder region in order to reduce

rolling resistance and provide anti-cracking properties. It should be noted that although Hashimura '114 fails to depict a junction point, it is evident from the figures that the circumferential grooves are positioned just below the equatorial radius of the carcass structure (analogous to junction point in Hashimura '863 and Matsuyama). Thus, one of ordinary skill in the art at the time of the invention would have found the 20 millimeter range of the claimed invention to have been obvious as it defines a plurality of radial positions which are suggested by Hashimura '114, it being noted that 20 millimeters defines approximately 10-20% of a conventional tire section height (depending on specific type of tire). Also, applicant defines a broad range of values for the groove depth (10-30% of sidewall thickness) that one of ordinary skill in the art at the time of the invention would have readily appreciated at the time of the invention. As requested by applicant, Matsui has been provided to evidence the well-known groove construction of the claimed invention, as established by the examiner in the previous office action, in which the depth of the circumferential groove is within 10 to 30 % of the sidewall thickness. As such, it would have been obvious to include a circumferential groove close to the junction point and having a depth between 10 % and 30% of the sidewall thickness since such a groove is conventionally used in the shoulder regions of pneumatic tires for the benefits detailed above. It is noted that the groove depth of between 0.2 and 0.6 times the sidewall thickness at the location of the groove in Matsui is actually smaller in relation to the sidewall thickness that is measured to the inside wall of the tire (as in the claimed invention). Thus, the lower extreme of the range of Matsui is actually below 0.20 and the higher extreme of Matsui is actually below 0.60, wherein the modified range incorporates nearly every embodiment between 0.10 and 0.30.

Allowable Subject Matter

5. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The reasons for indicating this claim allowable are detailed in Paper Number 7, Paragraph 5.

Response to Arguments

6. Applicant's arguments with respect to claims 1-4 have been considered but are not found to be persuasive. Regarding Hashimura and Matsuyama, applicant primarily contends that the drawings of each reference cannot be used to obtain the dimensions of the claimed invention because they are not drawn to scale.

It is initially noted that the claimed invention requires the following two limitations:

(a) radial position of junction point is between 80% and 90% of the radial height of the equatorial crown radius of the tread portion

(b) radial position of junction point is between 90% and 100% of the radial height of the carcass structure at the equatorial plane, wherein said junction point is less than the relevant carcass height.

With respect to Hashimura, as set forth in the rejection above, Figure 1 clearly depicts the junction point as being at a radial height that is greater than 0.75 times the tire section height. In this instance, though, the tire section height is measured from the base of the bead cores and not the bead seat surface beneath the center of the bead core as in the claimed invention. Thus, the junction point of Hashimura is actually greater than 0.75 times the tire section height as measured in the claimed invention (from

bead eat surface). While it is recognized in the tire industry that some drawings constitute "working drawings" while other drawings are not representative of the specific dimension of a given tire structure, the figures of Hashimura are believed to be "working drawings" based on the reference lines depicted in Figure 1. In particular, the lines designated by the distances 0.75SH and 0.2SH, respectively, are positioned almost exactly at 75% and 20% of the tires section height SH. Applicant contends, however, that the drawings are not "working drawings" since (a) the ten equal parts (i.e. Gi-3 to Gi-4) are not depicted as being "equal" and (b) the aspect ratio of the tire in Figure 1 is approximately 0.64 while the tires of Hashimura are described as having an aspect ratio of 0.70. First, the ten parts in Figure 1 are depicted as being equally spaced on the inside wall of the carcass structure, which forms a smooth contour as opposed to the outside wall of the carcass/sidewall. Thus, the spacing between the "equal ten parts" in the outer wall of the carcass/sidewall would not be expected to be "equal" since the contour of said outer wall does not follow that of the inside wall. Second, regarding the aspect ratio, there is no indication in the reference that the tire of Figure 1 has an aspect ratio of 0.70. Although the reference (Column 4, Lines 25) describes a plurality of tires with the same tire construction (aspect ratio of 0.70), the reference fails to identify the tire of Figure 1 as having an aspect ratio of 0.70. Therefore, one of ordinary skill in the art at the time of the invention would have readily appreciated the teachings of Hashimura as defining a tire consistent with the dimensions of the claimed invention since the drawings of Hashimura are representative of "working drawings" as they accurately depict the location of a plurality of reference points in relation to the section height of the tire.

Regarding Matsuyama, applicant contends that the drawings of Matsuyama, which is directed to a heavy-duty tire, are not drawn to scale and therefore cannot be relied upon to teach or suggest the particular dimensions required by the claimed invention. In particular, applicant argues that the distance y2 in Figure 3 is equal to 33% of a distance H while the reference requires that it be between 35 and 45 % of H. First, it is noted that independent of the drawings of Matsuyama, the reference teaches that the distance y1 is equal to 10-30 % of the section height H. Thus, in the instance where y1 = 10%H, the remaining tire portions (junction height or radius and tread camber) are equal to 90% of the tire section height. One of ordinary skill in the art at the time of the invention would have readily appreciated the tread camber to be relatively small with respect to the tire section height (less than 10%H) such that the junction height would be between 80 and 90 % of the section height as required by the claimed invention. It is noted that Arai, which is similarly directed to heavy-duty tires, suggests that a flat crown is desired in heavy-duty tires in order to prevent belt edge separation and uneven tread wear, it being recognized that a flat crown region is analogous to defining a small tread camber. Thus, in viewing Matsuyama and Arai, one of ordinary skill in the art at the time of the invention would have expected the tread camber of Matsuyama to be small and particularly less than 10% of the tire section height and thus the junction height to be between 80 and 90% of the section height. Second, regarding the drawings of Matsuyama, although applicant contends that they cannot be used to obtain dimensions, the limitation of having a junction point between 90 and 100% of the carcass height at the equatorial radius can be derived from the disclosure of Matsuyama as a whole. In particular, Figure 3 of Matsuyama depicts the

junction height as being only slightly below the carcass equatorial height. One of ordinary skill in the art at the time of the invention would not have expected this extremely small separation to constitute more than 10% of the entire carcass equatorial height. The gross relative dimensions, which teach a separation of approximately 5%, are only further evidence that the distance between the junction height and the carcass equatorial height is extremely small, particularly less than 10% of the entire tire section height. Therefore, one of ordinary skill in the art at the time of the invention would have recognized the teachings of Matsuyama, in view of Aria, as describing a tire construction having a junction point in accordance to the limitations of the claimed invention.

It is further noted that applicant asserts that the tire construction of the claimed invention permits a serious reduction in the deformation that the circular junction between the tread mix and the sidewall mix undergoes. In particular, applicant describes the inability to place a tread mix over a sidewall mix with a joint cover or layer of rubber mix. Hashimura and Matsuyama, though, both depict a tire construction in which a tread mix is placed over a sidewall mix without the use of a joint cover, in an analogous manner to the design of the claimed invention. Furthermore, the tire constructions of Hashimura and Matsuyama generally depict a tire design in which the junction point is in a transition region that is slightly beneath the equatorial radius of the carcass (limitation b from above) and at a point that is close to the tire section height (limitation a from above). As such, absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it

obvious to form the tire constructions of either Hashimura or Matsuyama in accordance to the limitations of the claimed invention.

Regarding claims 2 and 3, as previously stated, it is well known and conventional to include circumferential grooves in the shoulder region of tires (region of junction point), as shown for example by Hashimura '114. Hashimura '114 specifically describes the use of at least one groove in the transition region between the tread and sidewall in order to reduce rolling resistance and provide ant-cracking properties. One of ordinary skill in the art at the time of the invention would have been motivated to incorporate such a groove in the transition region (junction point) of either Hashimura or Matsuyama for these benefits, as they are desirable in a plurality of pneumatic tire constructions.

Lastly, applicant has requested the examiner provide evidence that a groove depth of 10 to 30% defines a well-known construction of circumferential grooves in the shoulder region. As set forth in the rejection above, Matsui provides one example of a circumferential groove construction in the shoulder region (just below equatorial radius of carcass) in which the groove depth satisfies the broad limitations of the claimed invention.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(703) 605-4397**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Justin Fischer

April 3, 2003

Michael W. Ball
Supervisory Patent Examiner
Technology Center 1700